

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) An image processing apparatus comprising:  
input means for inputting image data of an original image;

~~first~~ discriminating means for extracting a predetermined region by using a feature of pixel of the image data input from the input means, and for discriminating an attribute of the region;

determining means for, on the basis of the distribution of the regions attributes of which are discriminated by the ~~first~~ discriminating means, determining whether or not the type of the image data ~~as at least one type selected from the group consisting of image data of uniform background, image data of dot background in the entire screen, image data of dot photo only, image data of continuous gradation photo only, image data of which region can be discriminated by rectangle, and image data of which region cannot be discriminated by rectangle~~ is a rectangular discriminative region; and

~~means for converting at least one of resolution, compression rate, and number of colors of the image data, depending on the type determined by the determining means;~~

~~second discriminating means for discriminating the image type of the image data received from the input means in pixel unit, when the determining result by the determining means is a specific result; and~~

~~second processing means for processing the image data as specified, on the basis of the result discriminated by the second discriminating means.~~

conversion means for performing image conversion when the determining means determines that the predetermined region extracted by the discriminating means is the rectangular discriminative region, said conversion means converting the image to lower resolution or increasing a compression rate of the image where the attribute of the region discriminated by the discriminating means is

one of a dot photo region and a continuous photo region, and converting multi-valued data of the image into binary data to reduce the quantity of information contained in each rectangular discriminative region when the attribute of the rectangular discriminative region is such that it contains only black characters.

Claims 2.-3. (Canceled)

4. (Previously Presented) An image processing apparatus according to claim 1, further comprising:

correcting means for correcting the image data by performing at least one of density conversion and filter processing, depending on the type determined by the determining means.

5. (Previously Presented) An image processing apparatus according to claim 1, further comprising:

changing means for changing the image format of the image data, depending on the type determined by the determining means.

6. (Previously Presented) An image processing apparatus according to claim 1, further comprising:

processing means for selecting an application of image processing, depending on the type determined by the determining means, setting a parameter, and starting the application to perform image processing of the image data.

7. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

means for performing specified processing on the basis of the attribute of the region discriminated by the ~~first~~ discriminating means, on the image data in

every region, when the determining result by the determining means is the specified result.

8. (Canceled)

9. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

setting means for setting for pixel unit discriminating process on the basis of the determining result by the determining means;

wherein the ~~second~~ discriminating means discriminates the image type of the image data received from the input means in pixel unit on the basis of the setting by the setting means, when the determining result by the determining means is the specified result.

10. (Currently Amended) An image processing apparatus according to claim 1, wherein the ~~second~~ discriminating means discriminates the image type of the image data received from the input means in pixel unit, when the determining means determines that it takes more than a specified time for determining.

11. (Currently Amended) An image processing apparatus according to claim 1, wherein the ~~second~~ discriminating means determines the discrimination precision of the ~~first~~ discriminating means, and when the discrimination precision is below a specific value, the ~~second~~ discriminating means discriminates the image type of the image data received from the input means in pixel unit.

12. (Currently Amended) An image processing apparatus according to claim 1, wherein the ~~second~~ discriminating means determines the complicatedness of the ~~first~~ discriminating means, and when the complicatedness is above a specific value, the ~~second~~ discriminating means

discriminates the image type of the image data received from the input means in pixel unit.

13. (Previously Presented) An image processing apparatus according to claim 1, further comprising:

storing means for receiving the image data from the input means, performing a first process on the image data parallel to the determining process of the determining means to obtain a first result, further performing a second process different from the first process to obtain a second result, and storing them in a memory region; and

means for reading out and outputting either one of the first result and second result from the storing means on the basis of the determining result of the determining means.

14. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

~~third~~ second discriminating means for discriminating the structure of the background from the extracted region, and judging the type of the image data on the basis thereof.

15. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

means for judging presence or absence of character from the distribution of attribute in each region discriminated by the ~~first~~ discriminating means, and judging the type of the image data on the basis thereof.

16. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

judging means for judging the type of the image data on the basis of the distribution of the attribute in each region discriminated by the ~~first~~ discriminating means; and

processing means for processing the data as specified on the basis of the image data judged by the judging means.

17. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

~~third~~ second discriminating means for discriminating the page information which is the image type of each page of the original image of the image data when the ~~first~~ discriminating means cannot divide the image data into a plurality of rectangular regions, and determining the type of the image data on the basis thereof.

18. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

~~third~~ second discriminating means for discriminating the page information which is the image type of each page of the original image of the image data when the region extracted by the ~~first~~ discriminating means has a complicatedness more than a specific value, and determining the type of the image data on the basis thereof.

19. (Currently Amended) An image processing apparatus according to claim 1, further comprising:

judging means for judging the type of the image data, regardless of the content of the original mode given from the user, on the basis of the distribution of the attribute of each region discriminated by the ~~first~~ discriminating means.

20. (Currently Amended) An image processing apparatus according to claim 1, wherein the ~~second~~ discriminating means discriminates the image

information of the image data received from the input means in the pixel unit according to the judging result when the judging result by the judging means is the specified result.

Claim 21 (Canceled)

22. (Currently Amended) An image processing method comprising:  
inputting step of inputting image data of an original image;

first discriminating step of extracting a predetermined region by using a feature of pixel of the image data input at the input step, and for discriminating an attribute of the region;

determining step of determining, based on the distribution of the regions attributes, whether or not the type of the image data ~~on the basis of the distribution of the attributes of the regions discriminated at the first discriminating step as at least one type selected from the group consisting of image data of uniform background, image data of dot background in the entire screen, image data of dot photo only, image data of continuous gradation photo only, image data of which region can be discriminated by rectangle, and image data of which region cannot be discriminated by rectangle~~ is a rectangular discriminative region;

~~converting step of converting at least one of resolution, compression rate, and number of colors of the image data, depending on the type determined at the determining step;~~

~~second discriminating step of discriminating the image type of the image data received from the input step in pixel unit, when the determining result at the first determining step is a specified result; and~~

~~processing step of processing the image data as specified, on the basis of the result discriminated at the second discriminating step~~

a conversion step for performing image conversion when the determining step determines that the predetermined region extracted by the discriminating step is the rectangular discriminative region, the conversion step converting the image to lower resolution or increasing a compression rate of the image where the attribute of the region discriminated by the discriminating step is one of a dot photo region and a continuous photo region, and converting multi-valued data of the image into binary data to reduce the quantity of information contained in each rectangular discriminative region when the attribute of the rectangular discriminative region is such that it contains only black characters.

Claims 23.-24. (Canceled)

21 25. (Previously Presented) An image processing method according to claim 22, further comprising:

correcting step of correcting the image data by performing at least one of density conversion and filter processing, depending on the type determined at the determining step.

26. (Previously Presented) An image processing method according to claim 22, further comprising:

changing step of changing the image format of the image data, depending on the type determined at the determining step.

27. (Currently Amended) An image processing method according to claim 22, further comprising:

~~second~~ processing step of selecting an application of image processing, depending on the type determined at the determining step, setting a parameter, and starting the application to perform image processing of the image data.

28. (Previously Presented) An image processing method according to claim 22, further comprising:

step of performing specified processing on the basis of the attribute of the region discriminated at the discriminating step, on the image data in every region, when the determining result at the determining step is a specified result.

29. (Canceled)

30. (Currently Amended) An image processing method according to claim 22, further comprising:

setting step of setting for pixel unit discriminating process on the basis of the determining result at the determining step;

~~third~~ second discriminating step of discriminating the image type of the image data received from the input step in pixel unit on the basis of the setting at the setting step, when the determining result at the determining step is a specified result; and

~~second~~ processing step of processing the image data as specified, on the basis of the result discriminated at the ~~third~~ second discriminating step.

31. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of discriminating the image type of the image data received from the input step in pixel unit, when it is determined that it takes more than a specified time for determining at the determining step; and

~~second~~ processing step of processing the image data as specified, on the basis of the result discriminated at the ~~third~~ second discriminating step.

32. (Currently Amended) An image processing method according to claim 22, further comprising:



~~third~~ second discriminating step of determining the discrimination precision at the discriminating step, and when the discrimination precision is below a specific value, discriminating the image type of the image data received from the input step in pixel unit; and

~~second~~ processing step of processing the image data as specified, on the basis of the result discriminated at the ~~third~~ second discriminating step.

33. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of determining the complicatedness at the discriminating step, and when the complicatedness is above a specific value, discriminating the image type of the image data received from the input step in pixel unit; and

~~second~~ processing step of processing the image data as specified, on the basis of the result discriminated at the ~~third~~ second discriminating step.

34. (Previously Presented) An image processing method according to claim 22, further comprising:

storing step of receiving the image data from the input step, performing a first process on the image data parallel to the determining process at the determining step to obtain a first result, further performing a second process different from the first process to obtain a second result, and storing them in a memory region; and

step of reading out and outputting either one of the first result and second result stored at the storing step on the basis of the determining result at the determining step.

35. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of discriminating the structure of the background from the extracted region, and judging the type of the image data on the basis thereof.

36. (Currently Amended) An image processing method according to claim 22, further comprising:

step of judging presence or absence of character from the distribution of attribute in each region discriminated at the ~~first~~ discriminating step, and judging the type of the image data on the basis thereof.

37. (Currently Amended) An image processing method according to claim 22, further comprising:

judging the type of the image data on the basis of the distribution of the attribute in each region discriminated at the ~~first~~ discriminating step; and

processing the data as specified on the basis of the type of the image data judged at the judging step.

38. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of discriminating the page information which is the image type of each page of the original image of the image data when the ~~first~~ discriminating step cannot divide the image data into a plurality of rectangular regions, and determining the type of the image data on the basis thereof.

39. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of discriminating the page information which is the image type of each page of the original image of the image data when the region extracted at the ~~first~~ discriminating step has a complicatedness

more than a specific value, and determining the type of the image data on the basis thereof.

40. (Currently Amended) An image processing method according to claim 22, further comprising a judging step of judging the type of the image data, regardless of the content of the original mode given from the user, on the basis of the distribution of the attribute of each region discriminated at the ~~first~~ discriminating step.

41. (Currently Amended) An image processing method according to claim 22, further comprising:

~~third~~ second discriminating step of discriminating the image information of the image data received from the input means in the pixel unit according to the judging result when the judging result at the judging step is the specified result; and

~~second~~ processing step of processing the image data as specified on the basis of the discrimination result discriminated at the ~~third~~ second discriminating step.

42. (Currently Amended) An image processing apparatus comprising:  
input means for inputting image data of an original image;

~~first~~ discriminating means for extracting a predetermined region by using a feature of pixel of the image data input from the input means, and for discriminating an attribute of the region;

determining means for, on the basis of the distribution of the regions ~~attribute~~ attributes of which are discriminated by the ~~first~~ discriminating means, determining whether or not the type of the image data ~~as at least one type selected from the group consisting of image data of uniform background, image data of dot background in the entire screen, image data of dot photo only, image data of continuous gradation photo only, image data of which region can be~~

~~discriminated by rectangle, and image data of which region cannot be discriminated by rectangle~~ is a rectangular discriminative region; and

~~means for converting at least one of resolution, compression rate, and number of colors of the image data, depending on the type determined by the determining means; and~~

~~image forming means for forming an image on a recording medium on the basis of the image data processed as specified by the converting means~~

~~second discriminating means for discriminating the image type of the image data received from the input means in pixel unit, when the determining result by the determining means is a specified result; and~~

~~processing means for processing the image data as specified, on the basis of the result discriminated by the second discriminating means~~

conversion means for performing image conversion when the determining means determines that the predetermined region extracted by the discriminating means is the rectangular discriminative region, said conversion means converting the image to lower resolution or increasing a compression rate of the image where the attribute of the region discriminated by the discriminating means is one of a dot photo region and a continuous photo region, and converting multi-valued data of the image into binary data to reduce the quantity of information contained in each rectangular discriminative region when the attribute of the rectangular discriminative region is such that it contains only black characters.

43. (Currently Amended) An image processing apparatus according to claim 42, further comprising:

~~third~~ second discriminating means for discriminating the page information which is the image type of each page of the original image of the image data when the region extracted by the ~~first~~ discriminating means has a complicatedness more than a specific value, and determining the type of the image data on the basis thereof.

c/ 44. (Currently Amended) An image processing apparatus according to claim 1, wherein the determining means first determines whether or not the image data is image data of uniform background, and if not, the determining means then determines if the image data is image data of dot background, and if not, the determining means then determines if the image data is image data of dot photo only or of continuous gradation photo only, and if not, the determining means then determines if the image data is image data which can be discriminated ~~by rectangle~~ as a rectangular region.

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